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WHAT IS CLAIMED IS:

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1. A tiled display apparatus, comprising:  
a plurality of display devices, wherein each display device is subdivided into  
5 a plurality of sections, and each section is configured to display a sectional image;  
a screen; and  
a plurality of lens assemblies, wherein one of the lens assemblies is optically  
coupled to each of the sections of each of the display devices to project the sectional  
image displayed on that section onto the screen, and the plurality of lens assemblies  
10 are configured to merge the projected sectional images to form a single tiled image.
  2. The apparatus of claim 1, wherein each display device comprises a flat-panel  
display (FPD).
  - 15 3. The apparatus of claim 2, wherein each display device comprises a liquid-  
crystal display (LCD).
  4. The apparatus of claim 1, wherein each display device comprises a non-FPD.
  - 20 5. The apparatus of claim 4, wherein each display device is selected from the  
group consisting of a cathode ray tube (CRT) display and a projection display.
  6. The apparatus of claim 1, wherein the screen comprises a rear projection  
screen having a rear side and a front side, and wherein the sectional images are  
25 projected onto the rear side and the tiled image is viewable from the front side.
  7. The apparatus of claim 1, wherein each of the lens assemblies includes a  
projection lens for projecting the respective sectional image onto the screen.

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8. The apparatus of claim 7, wherein each projection lens is symmetric.
  9. The apparatus of claim 8, wherein each projection lens includes a doublet of identical lenses.
  10. The apparatus of claim 8, wherein each projection lens includes a triplet of lenses.
  11. The apparatus of claim 8, wherein each projection lens includes a ball lens.
  12. The apparatus of claim 7, wherein each lens assembly also includes a field lens for focusing the respective sectional image onto the respective projection lens.
  13. The apparatus of claim 12, wherein the projection lens of each lens assembly has an optical axis and the field lens of each lens assembly has the same optical axis.
  14. The apparatus of claim 12, wherein the projection lens of each lens assembly has a first optical axis, the field lens of each lens assembly has a second optical axis, and the first and the second optical axis of at least one lens assembly are different.
  15. The apparatus of claim 1, wherein each lens assembly includes a plastic lens.
  16. The apparatus of claim 15, wherein the plurality of lens assemblies includes an array of plastic lenses for projecting an array of sectional images onto the screen.
  17. The apparatus of claim 1, wherein at least one lens assembly is configured to provide magnification having a magnitude of greater than 1 such that the respective projected sectional image on the screen is larger than the corresponding sectional image on the display device.

18. The apparatus of claim 17, wherein each display device includes a dead-band region between each pair of adjacent sections which is not projected onto the screen, and the lens assemblies provide magnification to merge adjacent projected sectional images together to eliminate the dead-band regions from the tiled image.

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19. The apparatus of claim 1, wherein at least one lens assembly is configured to provide a shift so the respective projected sectional image on the screen is shifted sideways with respect to an axis normal to the corresponding sectional image.

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20. The apparatus of claim 19, wherein adjacent display devices are separated by a gap, and at least one lens assembly adjacent to the gap is configured to shift the respective projected sectional image sideways with respect to the normal axis and towards the gap so as to eliminate at least part of the gap from the tiled image.

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21. The apparatus of claim 20, wherein both of the lens assemblies adjacent to the gap are configured to shift the respective projected sectional images sideways towards each other so as to eliminate the gap from the tiled image.

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22. The apparatus of claim 1, further comprising a plurality of backlight assemblies, each backlight assembly optically coupled to one of the display devices.

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23. The apparatus of claim 22, wherein each backlight assembly provides a plurality of backlight channels, and each backlight channel is configured to provide a separate backlight for one of the sections of the corresponding display device.

24. The apparatus of claim 23, wherein each backlight channel includes a condenser for concentrating light received from a light source onto the section.

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25. The apparatus of claim 23, wherein each backlight channel includes a fiber bundle for communicating light received from a light source onto the section.

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26. The apparatus of claim 23, wherein each backlight channel includes a tapered light pipe for communicating light from a light source onto the section.
- 5 27. The apparatus of claim 1, further comprising means for distortion control.
28. A method of generating a tiled display, comprising the steps of:  
providing a plurality of display devices;  
subdividing each of the display devices into a plurality of sections;  
10 displaying a sectional image on each section of each display device; and  
projecting the sectional image displayed on each section of each display device onto a screen with the projected sectional images merged into a tiled image.
29. The method of claim 28, wherein the projecting step includes focusing the  
15 respective sectional image onto a projection lens for projecting the sectional image.
30. The method of claim 28, wherein the projecting step includes projecting an array of sectional images onto the screen using an array of plastic projection lenses.
- 20 31. The method of claim 28, wherein the projecting step includes magnifying at least one of the sectional images such that the respective projected sectional image on the screen is larger than the corresponding sectional image on the display device.
- 25 32. The method of claim 31, wherein the subdividing step includes defining a dead-band region between each pair of adjacent sections on each display device, and the projecting step includes magnifying adjacent sectional images on either side of the dead-band regions to eliminate the dead-band regions from the tiled image.

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33. The method of claim 28, wherein the projecting step includes shifting at least one of the projected sectional images sideways on the screen with respect to an axis normal to the corresponding sectional image.
- 5 34. The method of claim 33, wherein the providing step includes defining a gap separating adjacent display devices, and the projecting step includes shifting at least one projected sectional image adjacent to the gap sideways with respect to the axis and towards the gap so as to eliminate at least part of the gap from the tiled image.
- 10 35. The method of claim 34, wherein the projecting step includes shifting a pair of projected sectional images adjacent to the gap sideways towards each other so as to eliminate the gap from the tiled image.
- 15 36. The method of claim 28, further comprising optically coupling a backlight to each of the sections of each of the display devices.
37. An apparatus for generating a tiled display, comprising:  
a plurality of display devices;  
a screen;  
20 means for subdividing each display device into a plurality of sections;  
means for displaying a sectional image on each section of each display device; and  
means for projecting the sectional image displayed on each section of each display device onto the screen with the projected images merged into a tiled image.
- 25 38. The apparatus of claim 37, wherein the projecting means includes means for magnifying at least one of the sectional images so the projected sectional image on the screen is larger than the corresponding sectional image on the display device.

39. The apparatus of claim 37, wherein the projecting means includes means for shifting at least one of the projected sectional images sideways on the screen with respect to an axis normal to the corresponding sectional image on the display device.

5 40. The apparatus of claim 37, further comprising means for distortion control.

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